Physics

Time Remaining: 45/45 (Minutes)

Q.1 | TEST 6 WAVES | Physics Unit Wise

A source of sound of frequency 450 cycles/sec is moving towards a stationary observer with 34 m/sec speed. If the speed of sound is 340 m/sec, then the apparent frequency will be

A) 410 cycles/sec
B) 500 cycles/sec
C) 550 cycles/sec
D) 450 cycles/sec

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Correct Answer:

A B C D

Next

Time Remaining: 44/45 (Minutes)

Q.2 | TEST 6 WAVES | Physics Unit Wise

For a closed organ pipe resonance is occurred when air columns of lengths are equal to

A) $\frac{\lambda}{1}, \frac{\lambda}{2}, \lambda$

B) $\frac{\lambda}{2}, \lambda, 3\lambda$

C) $\frac{\lambda}{2}, \frac{3\lambda}{2}, \frac{5\lambda}{2}$

D) $\frac{\lambda}{4}, \frac{3\lambda}{4}, \frac{5\lambda}{4}$

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Correct Answer:

A B C D

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Physics

Time Remaining: 44/45 (Minutes)

Q.3 | TEST 6 WAVES | Physics Unit Wise

An air column in a pipe, which is closed at one end, will be in resonance with a vibrating body of frequency 166 Hz, if the length of the air column is. (speed of sound=332ms^{-1})

A) 2.00 m
B) 1.50 m
C) 1.00 m
D) 0.50 m

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Correct Answer:

A B C D

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Time Remaining: 44/45 (Minutes)

Q.4 | TEST 6 WAVES | Physics Unit Wise

A stretched string of length 1 fixed at both ends can sustain stationary wave of wavelength λ is given by

A) $\lambda_n = \frac{n^2}{2l}$

B) $\lambda_n = \frac{2l}{n}$

C) $\lambda_n = \frac{l^2}{2n}$

D) $\lambda_n = 2l/n$

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Correct Answer:

A B C D

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Physics

Time Remaining: 44/45 (Minutes)

Q.5 | TEST 6 WAVES | Physics Unit Wise

Energy is not carried by

A) Longitudinal progressive waves
B) Transverse progressive waves
C) Electromagnetic waves
D) Stationary wave

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Correct Answer:

A B C D

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Physics

Time Remaining: 43/45 (Minutes)

Q.6 | TEST 6 WAVES | Physics Unit Wise

In stationary wave the distance between two successive nodes or two successive antinodes is equal to

A) λ

B) $\frac{\lambda}{3}$

C) $\frac{\lambda}{2}$

D) $\frac{\lambda}{4}$

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Correct Answer:

A B C D

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Time Remaining: 43/45 (Minutes)

Q.7 | TEST 6 WAVES | Physics Unit Wise

A tube closed at one end and containing air, produces, when excited, the fundamental note of frequency 512 Hz. If the tube is open at both ends, the fundamental frequency that can be excited is (in Hz)

A) 1024
B) 256
C) 512
D) 128

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Correct Answer:

A B C D

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Physics

Time Remaining: 43/45 (Minutes)

Q.8 | TEST 6 WAVES | Physics Unit Wise

The frequency of the note produced by plucking a given string increases as

A) The length of the string increases
B) The tension in the string decreases
C) The tension in the string increases
D) The mass per unit length of the string increases

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Correct Answer:

A B C D

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Physics

Time Remaining: 43/45 (Minutes)

Q.9 | TEST 6 WAVES | Physics Unit Wise

The speed of sound in air is 350 meter per second. The fundamental frequency of an open pipe 50 cm long will be

A) 175 Hz B) 700 Hz C) 350 Hz D) 50 Hz

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Correct Answer:

A B C D

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Physics

Time Remaining: 42/45 (Minutes)

Q.10 | TEST 6 WAVES | Physics Unit Wise

The sonometer wire is vibrating in the second overtone. We may say that there are

A) Two nodes and two antinodes
B) Four nodes and three antinodes
C) One nodes and two antinodes
D) Three nodes and three antinodes

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Correct Answer:

A B C D

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Physics

Time Remaining 42/45 (Minutes)

Q.11 TEST 6 WAVES Physics Unit Wise

In a closed end organ pipe the fundamental frequency is f. what will be the ratio of frequencies of the next three overtones?

A) 2: 3: 4 B) 3: 7: 11 C) 3: 4: 5 D) 3: 5: 7

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Correct Answer:

A B C D

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Physics

Time Remaining 42/45 (Minutes)

Q.12 TEST 6 WAVES Physics Unit Wise

In a stationary wave every particle performs

A) a S.H.M. at all points of the medium
B) a S.H.M. at all points except the antinodes points
C) a S.H.M. at all points except nodal points
D) a S.H.M. of constant amplitude

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Correct Answer:

A B C D

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Physics

Time Remaining: 41 / 45 (Minutes)

Q.13 TEST 6 WAVES Physics Unit Wise

If frequency of vibration of string is increased by a factor two, then tension in string will be

A) Half
B) One fourth
C) Double
D) Four times

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Correct Answer:

A B C D

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Physics

Time Remaining: 41 / 45 (Minutes)

Q.14 TEST 6 WAVES Physics Unit Wise

An observer approaches a stationary 1000 Hz sound source twice the speed of sound. What frequency does the observer hear?

A) 4,000 Hz B) 3,000 Hz
C) 2,000 Hz D) none of these

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Correct Answer:

A B C D

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Physics

Time Remaining: 41 : 45 (Minutes)

Q.15 TEST 6 WAVES Physics Unit Wise

Which of the following is the longitudinal wave?

A) Sound waves
B) Waves on plucked string
C) Water waves
D) Light waves

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Correct Answer:

A B C D

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Time Remaining 41:45 (Minutes)

Q.16 TEST 6 WAVES Physics Unit Wise

Which one of the following is the correct?

	Distance between two consecutive nodes	Distance between two consecutive crests	Distance between adjacent crest and trough	Distance between adjacent node and antinode
A)	λ	λ	$\frac{\lambda}{2}$	$\frac{\lambda}{2}$
B)	$\frac{\lambda}{2}$	$\frac{\lambda}{2}$	$\frac{\lambda}{4}$	$\frac{\lambda}{4}$
C)	$\frac{\lambda}{2}$	λ	$\frac{\lambda}{2}$	$\frac{\lambda}{4}$
D)	$\frac{\lambda}{2}$	λ	$\frac{\lambda}{4}$	$\frac{\lambda}{4}$

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Correct Answer

A B C D

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Physics

Time Remaining 40/45 (Minutes)

TEST 6 WAVES — Physics Unit Wise

An observer with velocity u_o is receding from a sound source of frequency f and wavelength □ then number of waves received in one second by the observer if speed of sound is v.

A) $f\left(\frac{\lambda}{v_s}\right)$

B) $\frac{V-u_o}{\lambda}$

c) $\left(\frac{1}{V-u_o}\right)f$

d) $\left(\frac{V}{V+u_o}\right)f$

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Correct Answer:

A B C D

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Physics

Time Remaining 40/45 (Minutes)

Q.16 TEST 6 WAVES Physics Unit Wise

sound source is moving towards stationary listener with 1/10th of the speed of sound. The ratio of apparent to real frequency is

A) 9:10 B) 10:9 C) 11:10 D) 10:11

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Correct Answer:

A B C D

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Physics

Time Remaining 40/45 (Minutes)

Q.15 TEST 6 WAVES Physics Unit Wise

10 waves pass through the medium in one second with speed of 10 m/s. The wavelength of waves is:

A) 1m B) 20m C) 10m D) 100m

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Correct Answer:

A B C D

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Physics

Time Remaining 39/45 (Minutes)

Q.20 TEST 6 WAVES Physics Unit Wise

Half wavelength corresponds to:

A) 0º B) 180º C) 90º D) 360º

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Correct Answer:

A B C D

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Physics

Time Remaining 39/45 (Minutes)

TEST 6 WAVES — Physics Unit Wise

If a stretched-string is 4m and it has 4 loops of stationary waves, then wave length is

A) 1m B) 3m C) 2m D) 4m

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Correct Answer:

A B C D

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Physics

Time Remaining 39/45 (Minutes)

TEST 6 WAVES — Physics Unit Wise

The distance between 1st node and 4th antinode is:

A) $\frac{7}{4}\lambda$

B) $5\frac{\lambda}{4}$

C) $13\frac{\lambda}{4}$

D) $11\frac{\lambda}{4}$

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Correct Answer:

A B C D

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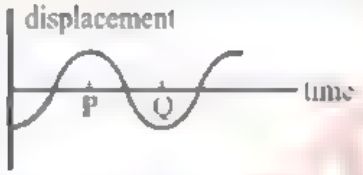
Time Remaining 39/45 (Minutes)

Q.23 TEST 6 WAVES Physics Unit Wise

In the diagram below, the interval PQ represents

A) Wavelength/2
B) 2 × amplitude
C) Wavelength
D) Period/2



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Correct Answer:

A B C D

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Physics

Time Remaining 38/45 (Minutes)

Q.25 TEST 6 WAVES Physics Unit Wise

In which of the following, Doppler's effect is not applicable?

A) To find speed of satellite
B) To find objects under water
C) To find speed of star
D) To tune a musical instrument

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Correct Answer:

A B C D

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Physics

Time Remaining: 38/45 (Minutes)

Q.26 TEST 6 WAVES Physics Unit Wise

An observer move with velocity 'vo' toward a stationary source, then the number waves received in one second is (v is speed of sound):

A) $f' = f\left(\frac{v}{v+v_o}\right)$

B) $f' = f\left(\frac{v}{v-v_o}\right)$

C) $f' = f\left(\frac{v+v_o}{v}\right)$

D) $f' = f\left(\frac{v}{v_o}\right)$

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Correct Answer:

A B C D

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Time Remaining: 37:45 (Minutes)

TEST 6 WAVES — Physics Unit Wise

If a train of waves moving along a rope has a velocity of 100ms^{-1} and a wavelength of 20m, then the time period is:

A) 5 seconds
B) 2000 seconds
C) 0.2 second
D) 666 second

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Correct Answer:

A B C D

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Physics

Time Remaining 37:45 (Minutes)

Q.28 TEST 6 WAVES Physics Unit Wise

The frequency of the first harmonic of a string stretched between two points is 100HZ. The frequency of the third overtone is

A) 200Hz B) 300Hz C) 400Hz D) 600Hz

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Correct Answer:

A B C D

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Time Remaining: 36/45 (Minutes)

Q.29 | TEST 6 WAVES | Physics Unit Wise

At open end of organ pipe

A) An antinode is always produced
B) A node is always produced
C) Either node or antinode may be produced
D) Neither node nor antinode is produced

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Correct Answer:

A B C D

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Time Remaining: 33/45 (Minutes)

Q.30 | TEST 6 WAVES | Physics Unit Wise

Stationary waves of fundamental frequency 50 Hz are produced in an organ pipe closed at one end. The distance between a node and anti-node is (velocity of sound = 300 m/s)

A) 6 m
B) 2 m
C) 3 m
D) 1.5 m

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Correct Answer:

A B C D

Submit Quiz

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Test NO #06

02-8-2021 Tuesday

Waves – 01

Answer key

1 B 2 D 3 D 4 B 5 D 6 C 7 A 8 C 9 C
10 B 11 B 12 C 13 D 14 B 15 A 16 C 17 B 18 B
19 A 20 B 21 C 22 A 23 D 24 D 25 D 26 B 27 C
28 C 29 A 30 D

$f = f'=f\left(\frac{v}{v-45}\right) \rightarrow 450\left(\frac{340}{340-34}\right) \rightarrow 450\left(\frac{340}{306}\right)$

MCQ NO #02 $\lambda = \frac{4l}{n}$ $l = \frac{\lambda n}{4} = \frac{32 \times 5}{4}$

MCQ NO #03 $f = \frac{nv}{4l} = \frac{332}{4l}$ $l = \frac{2 \times 332}{4 \times 166} = \frac{1}{2}$

$\boxed{0.5}$

MCQ NO 04 For String $\lambda = \frac{2l}{n}$

MCQ NO 7 open – 2 f close open – 2(512) = 1024

MCQ – 8 $F = \sqrt{T}$

MCQ #09 $f = \frac{nv}{2l}$ $\frac{356}{2(05}$ $= \boxed{356}$

MCQ #10

MCQ 12 SHM except node energy = 0
up and down motion

MCQ NO 13 $f \propto \sqrt{T}$ $= f^2 \propto T$

(2f) – (4 times)

MCQ NO#14 $f' = f\left(\frac{v+40}{v}\right)$

$f' = f\left(\frac{v+20}{v}\right) = \left(\frac{30}{v}\right)f$

$3 \times 1000 = \boxed{3000Hz}$

MCQ NO 18

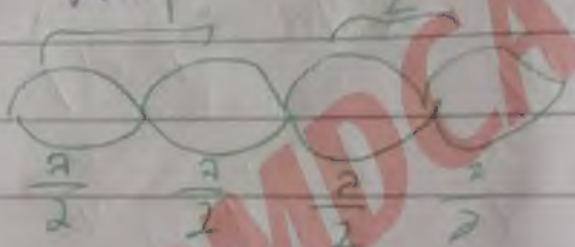
$f = f'\left(\frac{v}{v+45}\right) \quad \left(v - \frac{v}{10}\right) = \frac{9v}{10}$

$\frac{10v}{9v} = \boxed{10:9}$

MCQ NO 19

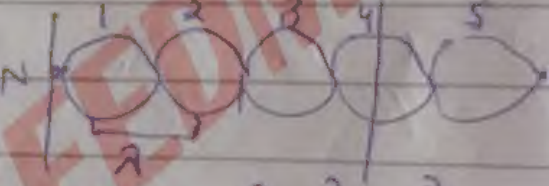
$f = \frac{\text{no of wave}}{\text{time}} = \frac{10}{5} = \boxed{2m}$

MCQ NO 21



$\frac{\lambda}{2} \quad \frac{\lambda}{2} \quad \frac{\lambda}{2} \quad \frac{\lambda}{2}$ $\boxed{2m}$

MCQ NO 22



$\lambda \quad \frac{\lambda}{2} \quad \frac{\lambda}{4}$

MCQ NO 27 $v = \frac{\lambda}{T} \quad T = \frac{\lambda}{v} = \frac{6}{300} = \frac{1}{5}\boxed{0.2}$

MCQ 36 $f = 50Hz \quad v = ? \quad v = f\lambda$

$\lambda = \frac{v}{f} = \frac{300}{50} = 6m$

$\boxed{\lambda = 6m}$ nodes $\frac{\lambda}{4}$

$\frac{6}{4} \quad \frac{3}{2}\boxed{1.5}$

Discussion Complete